UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/633,188	08/01/2003	Shandor G. Daroczi	10031.000100	3172

31894 7590 12/12/2006

OKAMOTO & BENEDICTO, LLP
P.O. BOX 641330
SAN JOSE, CA 95164

EXAMINER	
FICK, ANTHONY D	

ART UNIT	PAPER NUMBER
1753	

DATE MAILED: 12/12/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/633,188	DAROCZI ET AL.	
	Examiner	Art Unit	
	Anthony Fick	1753	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 August 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *01 August 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *11/24/03 12/12/05*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities: on page 5, line 10, reference number "22" should be "222" to match the previous references to the conductive area.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1 through 3, 7, 10, 11, 12, 17, 18, 20 and 22 are rejected under 35 U.S.C. 102(b) as being anticipated by Ferguson (U.S. 5,185,042).

Ferguson discloses a generic solar cell array as shown in figure 1.

Regarding claim 1, the solar cell array comprises two solar cells, dotted outline in figure 1, having a backside comprising areas of different electrical polarity (column 3, paragraph 5), and a plurality of contact points on the areas of different electrical polarity, 18 in figure 1. Figure 1 further shows the contact points being electrically coupled to contact points on the backside of a second solar cell by separate pieces of interconnect leads, 13, 14 and 20.

Regarding claim 2, figure 1 also shows the areas having at least three contact points (10 in figure 1).

Regarding claim 3, figure 1 shows the pieces of interconnect leads having curves, and Ferguson discloses stress relief loops for the electrical conductive leads (column 4, paragraph 1).

Regarding claim 7, Ferguson discloses attaching the leads by soldering to the contact points (column 3, paragraph 4).

Regarding claim 10, Ferguson discloses the array is part of a solar panel or module (column 3, paragraph 2).

Regarding claim 11, the solar cell array comprises two solar cells, dotted outline in figure 1, having a backside plurality of contact points, 18 in figure 1. Figure 1 further shows the contact points being electrically coupled to contact points on the backside of a second solar cell by separate pieces of interconnect leads, 13, 14 and 20.

Regarding claim 12, figure 1 shows the pieces of interconnect leads having curves, and Ferguson discloses stress relief loops for the electrical conductive leads (column 4, paragraph 1).

Regarding claim 17, Ferguson also discloses a method of making the solar cell array as described for claims 1 and 11.

Regarding claim 18, figure 1 shows the pieces of interconnect leads having curves, and Ferguson discloses stress relief loops for the electrical conductive leads (column 4, paragraph 1).

Regarding claim 20, the solar cell array comprises two adjacent solar cells, dotted outline in figure 1, having a backside plurality of contact points, 18 in figure 1. Figure 1 further shows the contact points being electrically coupled to contact points on

the backside of a second solar cell by separate pieces of interconnect leads, 13, 14 and 20.

Regarding claim 22, figure 1 shows the pieces of interconnect leads having curves, and Ferguson discloses stress relief loops for the electrical conductive leads (column 4, paragraph 1).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1, 2, 6 through 11, 16, 17, 20 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shimada (U.S.P.G.Pub 2002/0059952) in view of Gee (U.S. 5,468,652).

Shimada discloses a solar cell array as shown in figures 4 and 5.

Regarding claim 1, figure 4 shows a first solar cell connected to a second solar cell by separate pieces of interconnect leads, 3. Figures 5 and 6 show that each solar cell has a area of a first electrical polarity and an area of a second electrical polarity with a plurality of contact points on each area, the interconnect leads coupling the contact points of the first solar cell to the second solar cell.

Regarding claim 2, figure 5 shows each area has at least three contact points.

Regarding claim 6, figure 4 shows the pieces of interconnect leads comprise three leads.

Regarding claim 7, Shimada discloses connection of the leads by soldering to the contact points (paragraph 0060).

Regarding claim 8, figure 4 shows a busbar electrically coupled to a second area of the bottom cell.

Regarding claim 9, figure 4 shows a third solar cell having an area that is electrically coupled to the second area.

Regarding claim 10, Shimada discloses the array is part of a solar cell module (title).

Regarding claims 11, 17 and 20, figure 4 shows a first solar cell connected to a second solar cell by separate pieces of interconnect leads, 3. Figures 5 and 6 show that each solar cell has a plurality of contact points, the interconnect leads coupling the contact points of the first solar cell to the second solar cell.

Regarding claim 16, figure 4 shows the pieces of interconnect leads comprise three leads.

Regarding claim 21, figure 4 shows a busbar electrically coupled to a second area of the bottom cell.

The difference between Shimada and the claims is the requirement for the solar cells to be back contacted solar cells.

Gee teaches back-contacted solar cells. The cells as shown in figure 1, have metal grids of n-type and p-type contacts formed on the backside of the cells (column 3, paragraph 2).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the back-contacted solar cells of Gee within the module and method of forming a module of Shimada because back-contact cells have no grid obscuration losses and module assembly is simplified (Gee column 1, paragraph 4). Because Gee and Shimada are both concerned with solar cells, one would have a reasonable expectation of success from the combination. Thus the combination meets the claims.

6. Claims 3, 5, 12, 15, 18 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shimada in view of Gee as applied to claims 1, 2, 6 through 11, 16, 17, 20 and 21 above, and further in view of Ho et al. (U.S.P.G.Pub 2004/0040593).

The disclosure of Shimada in view of Gee is as stated above for claims 1, 2, 6 through 11, 16, 17, 20 and 21.

The difference between Shimada in view of Gee and the claims is the requirement of the interconnect leads to be curved or perforated.

Ho teaches a solar cell as shown in figure 13A. The solar cell has interconnect tabs to connect solar cells together as shown in figures 13A and 13B. The interconnect tabs include a curved section and holes or perforations as seen in figure 13B.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the interconnect tabs of Ho within the device and method of forming a device of Shimada in view of Gee because the tabs provide stress relief between the connected cells (Ho paragraph 0059). Because Ho and Shimada in view

of Gee are concerned with solar cells, one would have a reasonable expectation of success from the combination. Thus the combination meets the claims.

7. Claims 4, 13, 14 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shimada in view of Gee, further in view of Ho as applied to claims 3, 5, 12, 15, 18 and 22 above, and further in view of Dran et al. (U.S. 4,321,418).

The disclosure of Shimada in view of Gee, further in view of Ho is as stated above for claims 3, 5, 12, 15, 18 and 22.

The difference between Shimada in view of Gee, further in view of Ho and the claims is the requirement of a specific material for the conductive material.

Dran teaches photocell panels as shown in figure 3. Dran further teaches the cells are interconnected with strips of tinned copper or tin coated copper (column 3, paragraph 4).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize tin coated copper as in Dran as the conductive strip material within the device and method of Shimada in view of Gee, further in view of Ho because tin coated copper exhibits good electrical conductivity (Dran column 3, paragraph 4). Because Shimada in view of Gee, further in view of Ho and Dran are concerned with solar cells, one would have a reasonable expectation of success from the combination. Thus the combination meets the claims.

8. Claims 4, 13, 14 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ferguson as applied to claims 1 through 3, 7, 10, 11, 12, 17, 18, 20 and 22 above, and further in view of Dran et al. (U.S. 4,321,418).

The disclosure of Ferguson is as stated above for claims 1 through 3, 7, 10, 11, 12, 17, 18, 20 and 22.

The difference between Ferguson and the claims is the requirement of a specific material for the conductive material.

Dran teaches photocell panels as shown in figure 3. Dran further teaches the cells are interconnected with strips of tinned copper or tin coated copper (column 3, paragraph 4).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize tin coated copper as in Dran as the conductive strip material within the device and method of Ferguson because tin coated copper exhibits good electrical conductivity (Dran column 3, paragraph 4). Because Ferguson and Dran are concerned with solar cells, one would have a reasonable expectation of success from the combination. Thus the combination meets the claims.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anthony Fick whose telephone number is (571) 272-6393. The examiner can normally be reached on Monday thru Friday 7 AM to 4 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on (571) 272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

NAM NGUYEN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700

Anthony Fick ADF
AU 1753
December 7, 2006